

# MS-SERIES

## SOLID STATE FREQUENCY CONVERTER

HIGH PERFORMANCE AC POWER FOR TODAY'S ELECTRONIC LOADS

62.5 to 625 kVA  
47 to 500 Hz

MAXIMIZE  
PERFORMANCE AND VERSATILITY.  
VIRTUALLY ELIMINATE DOWNTIME.



Pacific's unique master/slave configuration allows up to ten 62.5 kVA mainframes to be paralleled in the field. Any mainframe may be designated as the master. A failed unit is automatically disconnected from the power grid providing unmatched mission reliability.

### Pacific's MS-Series Power Source Systems Feature:

- Maximum system reliability
- Lower installation cost
- Lower maintenance cost
- Unmatched performance/price ratio
- Uninterruptible Power Source configuration (UMS Option) readily available
- Rugged, powerful output
- All frequency operation
- Facility/test power flexibility
- Simple display and diagnostics



SmartSource™

PRECISION AC Power Sources

# TRUE ADVANTAGES

## Solid State Technology

## Unmatched Price/Performance Ratio

Pacific MS-Series equipment is a family of High Performance Line Conditioners/Frequency Converters designed to provide highly flexible, yet reliable, AC power ranging from 62.5 to 625 kVA. Using field-proven double conversion methods, the MS-Series provides unmatched power quality without sacrificing size or efficiency.

Input AC power is rectified to DC by a special input power supply section. This minimizes input current distortion and prevents the load power factor from reflecting back onto the utility line. The DC is then converted back to AC by a high frequency, solid state, pulse-width modulated switchmode inverter under the control of a highly stable digital oscillator. The result is exceptional system performance with maximum reliability.

### RUGGED, POWERFUL OUTPUT

- **350 Amps of Pulse Current** is delivered by each 3060-MS for driving non-linear loads. This eliminates the need to oversize power requirements as is common to rotary or low quality PWM power systems.
- **Load Power Factor** is not an issue. The 3060-MS will drive virtually any load without damage or risk.
- **Excellent Regulation** and response time eliminates load "cross talk." Voltage sags common to other conversion methods are eliminated with 150 microsecond response time to a 50% load step. The output recovers to  $\pm 3\%$  of nominal within less than 1/10th of a cycle at 400 Hz.

### MAXIMUM RELIABILITY

- **Each 3060-MS** is capable of operating as either the master or slave in a multi-cabinet parallel system. Calculated single cabinet MTBF is greater than five years.
- **Mission Reliability** is assured. The parallel system architecture is such that a failed slave unit automatically removes itself from the power grid. Should the master unit fail, the operator can select any other paralleled unit as the new master from the front panel and restore system operation.

### SIMPLE/INFORMATIVE DISPLAY

- **Measures** volts, amps, watts and kVA for each input and output phase.
- **Efficiency** is continuously monitored allowing system performance verification.
- **Internal Diagnostics** assist in quickly locating failed components resulting in extremely low MTTR.
- **Power Generation** circuits are separate from display and diagnostics. A failure in the display logic will not affect output power quality. Output power cannot be interrupted by system interrogation.
- **Audible and Visual Alarms** alert the operator to any conditions requiring attention.

### LOW COST OF OWNERSHIP

- **Lower Maintenance Costs** are achieved through built-in diagnostics that minimize MTTR. Quick and easy repair is facilitated with a small complement of local spares.
- **Input Power Factor** is a constant 0.95 lagging, regardless of load. The MS Series actually corrects PF reflected back to the utility, eliminating PF penalties.
- **Low Installation Cost.** The MS Series fits through standard doorways. Audible noise is limited to cooling fans. There is no 400 Hz whine that requires noise isolation. Solid state design with a forklift base eliminates the need for concrete pads and vibration isolators common to rotary installations.

### FACILITY/TEST POWER FLEXIBILITY

- **Power Levels Grow** with demand. Units may be added or removed from the power grid as required.
- **Variable Frequency** range of 47-500 Hz, as well as switch selectable fixed frequency operation of 50, 60 or 400 Hz is standard on every model.
- **External Input** is provided as a standard feature. This allows operation as a variable frequency test power amplifier.
- **UPC-32 Programmable Controller Option** is available to provide steady state and transient control of output power from the RS-232 or GPIB bus.

# THE 3060-MS DELIVERS HIGH QUALITY AC POWER FOR ALL APPLICATIONS

## ELECTRICAL SPECIFICATIONS

### OUTPUT

Power	: 62.5kVA/50kW for each 3060-MS.
Voltage	: 0-120/208, 3 phase. May be loaded either WYE or Delta. Other optional voltages and configurations are available, such as: 0-240, single or split phase.
Current	: 175 Arms per phase continuous. 350Apk per phase for non-linear loads.
Overload (kW)	: 110% for 1 hour. 125% for 10 minutes. 150% for 10 seconds.
Frequency	: Selectable, crystal-based frequencies of 50, 60 or 400 Hz., variable oscillator range of 47 to 500 Hz., and external oscillator input are all standard.
Distortion	: 1% maximum THD, 50/60 Hz 2% maximum THD, 400 Hz
Load Regulation	: $\pm 1\%$ with AGC enabled
Line Regulation	: $\pm 1\%$ maximum for $\pm 10\%$ line voltage change.
Load Transient Response and Recovery Time	: 150 microseconds for 50% load step and 300 microseconds for 100% load step.
Load Power Factor	: Any. Unit delivers full rated kVA into any power factor.
Load Balance Restrictions	: None. Each phase is independently regulated.
Isolation	: Input is fully isolated from output and frame ground.
Protection	: Integral electronic current limiting with auto recovery. Output CB optional.

### INPUT

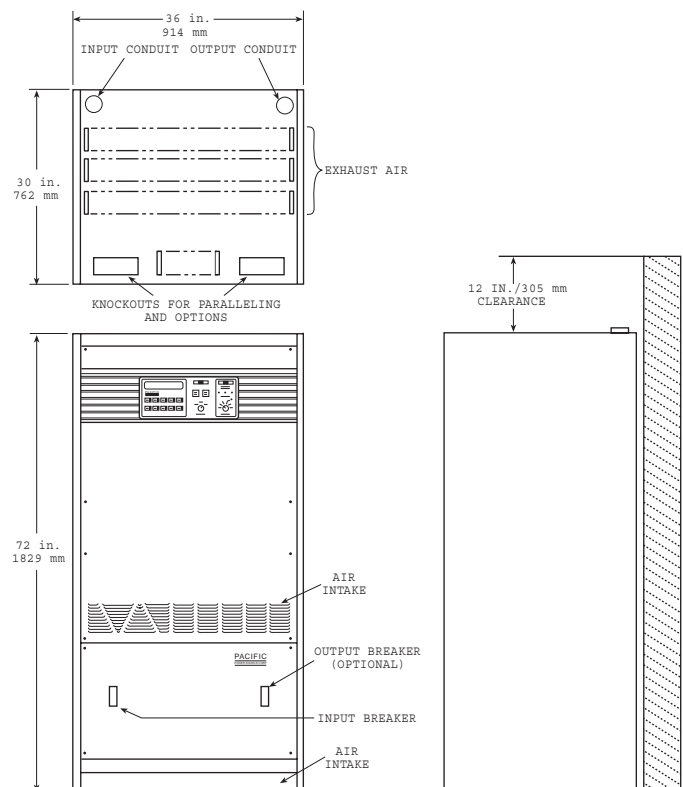
Voltage	: 208, 240, 380, 416, and 480 VAC, 3 phase Delta $\pm 10\%$ .
Frequency	: 47-63 Hz.
Power Factor	: 0.95 lagging.
Protection	: Input CB Standard. Slow turn-on circuit is provided to limit inrush current.

## PHYSICAL SPECIFICATIONS

Size	: 36"W x 30"D x 72"H (see diagram).
Weight	: 1100 lbs. Approximately 1200 lbs. with universal input option.
Ventilation	: Self-contained fans; bottom intake, top exhaust. 1200 CFM.
Noise Level	: 65 dbA at 3 feet.
Efficiency	: 85 to 90%.
Ambient Temperature	: 32° to 131°F (0° to 55°C) operating; -40° to 185°F (-40° to 85°C) storage.
Service Access	: Unit is designed for front access. Power cabling is routed through either top or bottom knock-outs.

## ADDITIONAL FEATURES

- Run time meter.
- Auto restart.
- RS-232 serial port for remote monitoring and diagnostics.
- Programmable voltage & frequency alarm set points.
- Optional GPIB Interface with SCU/UPC-32 Programmable Controller.
- Local automatic gain control. Remote sense optional.
- ETL Listing (optional on standard MS-Series cabinet only).



# UMS OPTION

## MS SERIES BATTERY SUPPORT SYSTEMS

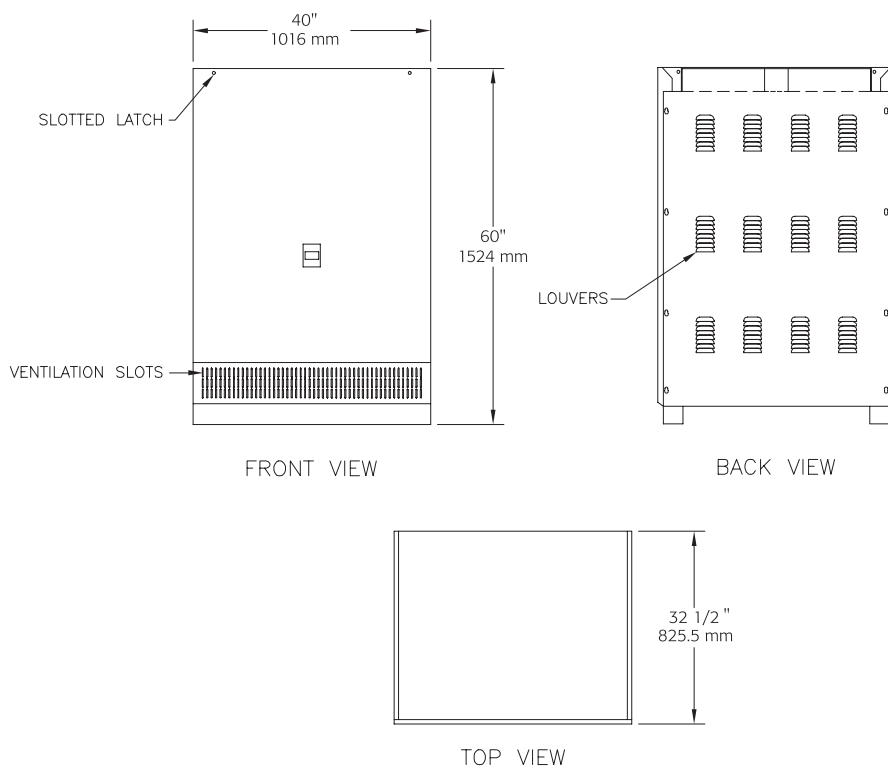
The battery support system for a single cabinet UMS installation (62.5kVA, 50kW) consists of 30 sealed, maintenance free, immobilized electrolyte, batteries installed in a Zone 4 cabinet. The UMS system DC voltage regulator provides for automatic charging of the battery system to maintain the proper float voltage.

A battery disconnect is located in the center of the battery cabinet front door.

Battery support time at full load (50kW) is approximately 15 minutes. The waveform quality at the end of the battery support time meets the requirements of MIL-STD 1399, section 300A, Types I, II and III power forms.

### On-Line, No-Risk Battery Test

This feature of the UMS system provides the ability to perform a battery test on command from the front panel or RS-232 serial port. Test results are displayed on the front panel and are available over the serial port as a part of the system diagnostics. A battery failure during the test will not cause the system to drop the load or distort the output waveform.



## CALL FOR TECHNICAL AND APPLICATION ASSISTANCE

Pacific's technical people are committed to assist you. We are a technically oriented company. We design, manufacture and service leading edge AC Power Equipment. We understand your requirement for strong applications support and we provide it!

### For Application Engineering Assistance

Contact the factory directly



17692 Fitch, Irvine, CA 92614  
Phone: 949-251-1800 • Fax: 949-756-0756  
TOLL FREE: 800-854-2433  
E-Mail: [sales@pacificpower.com](mailto:sales@pacificpower.com)  
WEB: [www.pacificpower.com](http://www.pacificpower.com)

or consult your local PPS Representative.